

Target Building General Construction Overview

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Target Building Scope Summary



- One-story building 200 feet wide by 290 feet long
- Neutron instrument floor houses neutron instruments; floor area to support experimenters and target mock up facilities
- Ring to Target Beam Transport (RTBT) shielded area brings beam to target
- Target Monolith and Hot Cell house Target and Target Maintenance Facilities
- Basement area includes services for the entire building
- High bay area houses cryogenic system for moderators allowing maintenance access of target system components
- The west yard contains service areas bringing in building utilities including helium and nitrogen
- A portion of the Target Building is a nuclear facility

Impact of Nuclear Facility Designation

- Safety Class and Safety Significant structures and components are designated on the drawings
- Safety Class and Safety Significant items may have special requirements that are included in the drawings and specifications
- Non-safety related systems such as ventilation systems and waste systems have some requirements in construction package beyond standard commercial requirements such as tracability of material and increased inspection requirements
- Most construction uses standard commercial practices

Target Building – Site and Utilities



- Substructures concrete will be installed by others to instrument floor level except for buildings 2 TU and 11 TU
- Piles included for building 11 TU (2 TU already installed)
- Some retaining walls and external concrete slabs included
- Target Building utilities will be extended by others from the central SNS utilities

Target Building - Architectural



- Target Building is a high volume one-story structure with several mezzanine and service levels
- Layout consist of two large instrument halls flanking a center core that houses the RTBT entry beamline, the Target, the Hot Cell, and Target mock-up areas
- Instruments that extend beyond the perimeter of the instrument halls are housed in single-story beamline and instrument enclosures

Target Building – Architectural (cont'd)



- The basement houses most of the support systems and has a truck access. Truck access is also provided to each instrument hall
- Exterior closure consist of two types of metal panels on a support framing system with a few windows
- A detached metal sided compressor building is included

Target Building - Structural



- Massive concrete substructure installed by others
- Building framing systems is structural steel to be installed by others
- Cranes (CMFE)-installed under the supervision of the manufacturer
 - 1 – 50 ton bridge NOG-1 type II in highbay
 - 2 – 30 ton bridge cranes in instrument halls
 - 2 – 5 ton jib cranes in instrument halls
 - 3 – 5-10 ton bridge cranes in attached building
 - 1 – 7.5 ton hot cell bridge crane
- Hot cell – 40” thick high density concrete structure with stainless steel liner that contains the Target mercury system and Target equipment maintenance area
- Target monolith – cylindrical concrete structure that contains target, moderators, core vessel, shutters, and steel shielding

Target Building – Mechanical



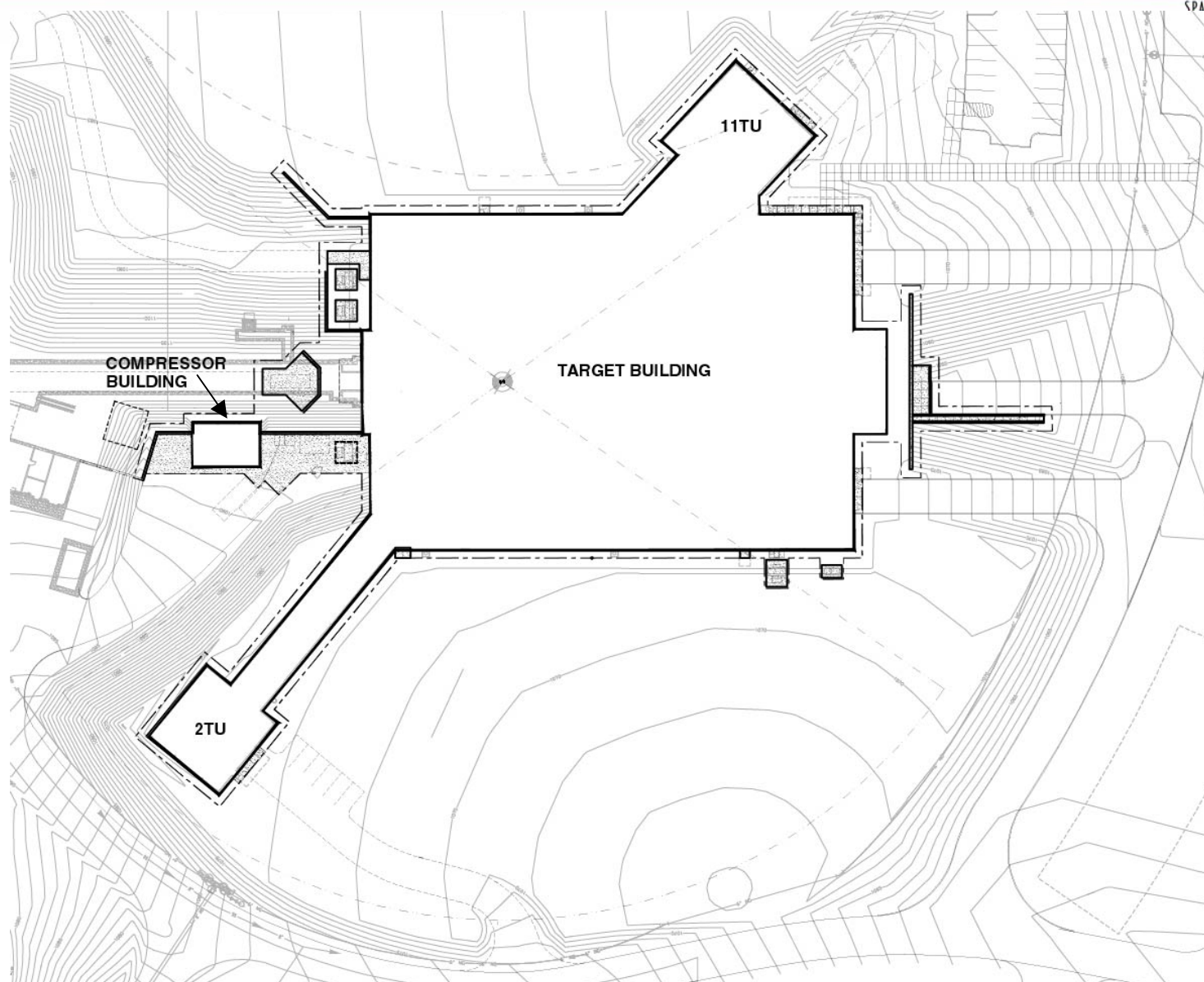
- Chilled water, tower water, and heated water for HVAC and process uses will be provided by others from central utilities
- HVAC systems will include stainless steel systems as well as galvanized sheet metal systems
- DI water loops installed as intermediate cooling loops
- Helium and nitrogen systems are installed
- Waste systems include liquid low level waste, process waste and sanitary waste

Target Building - Electrical

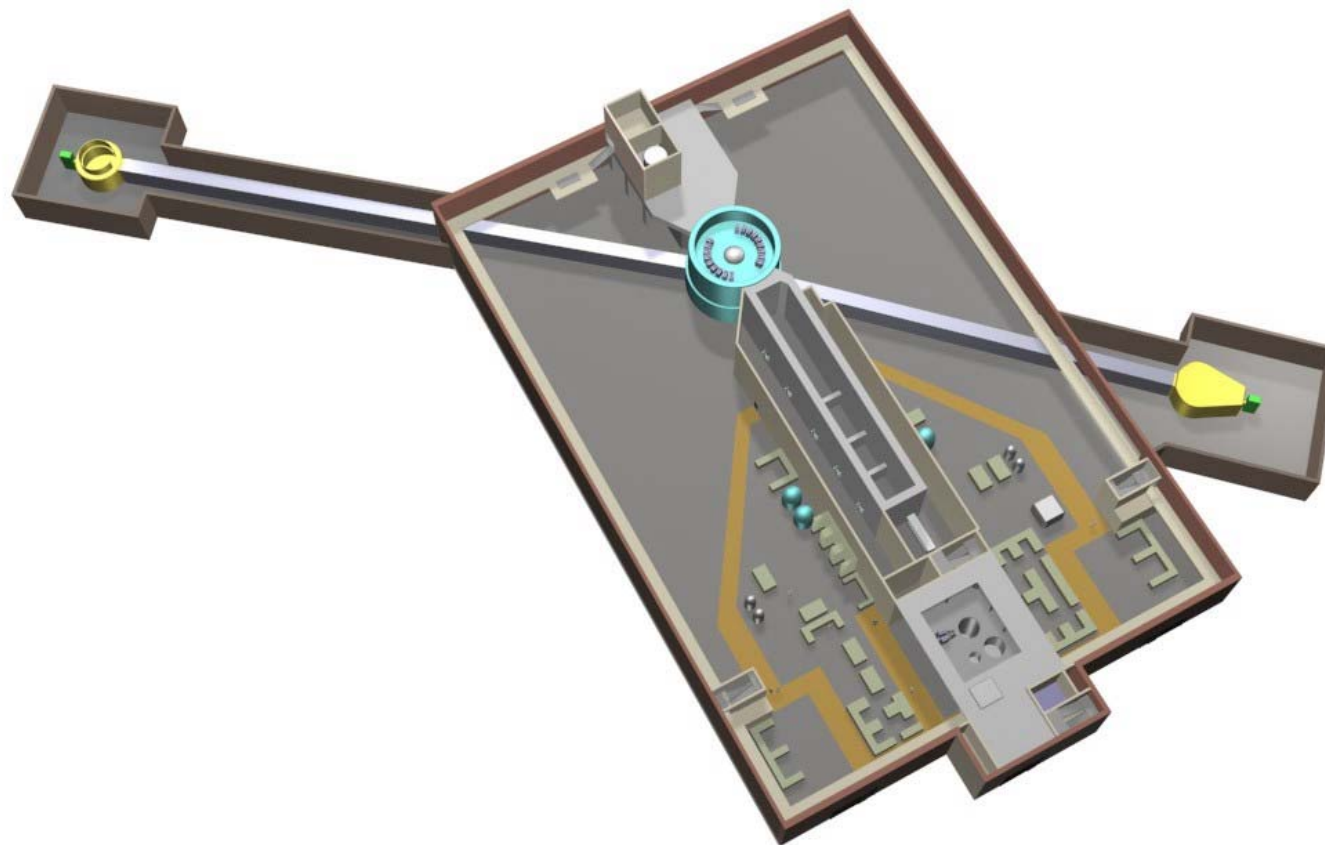


- Three 13,800/480V unit substations are included in the Target Building
- Diesel motor-generator and UPS systems will be installed for emergency and backup power
- Seven motor control centers will be provided to supply all motor loads

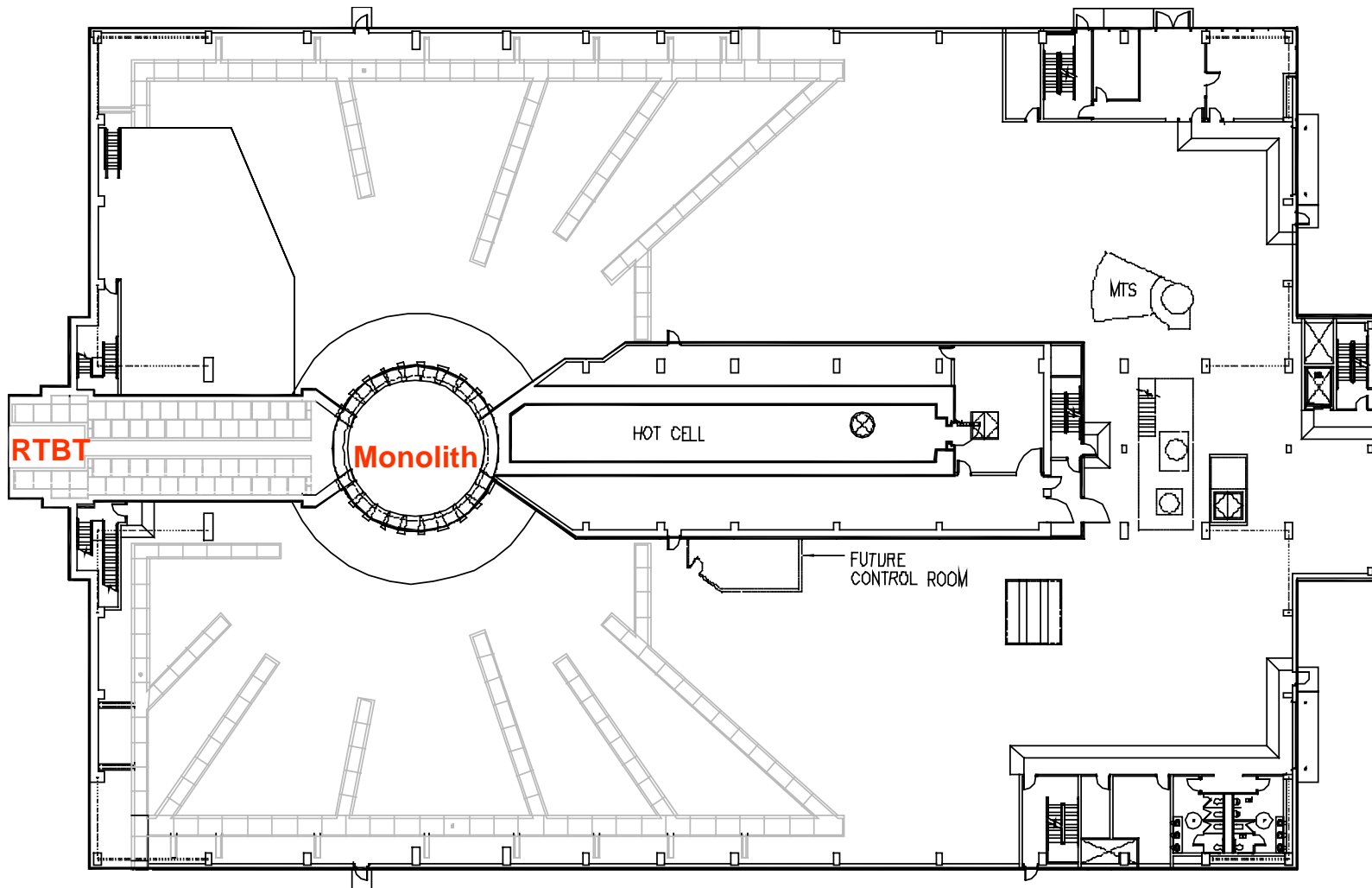
Target Building Site Plan



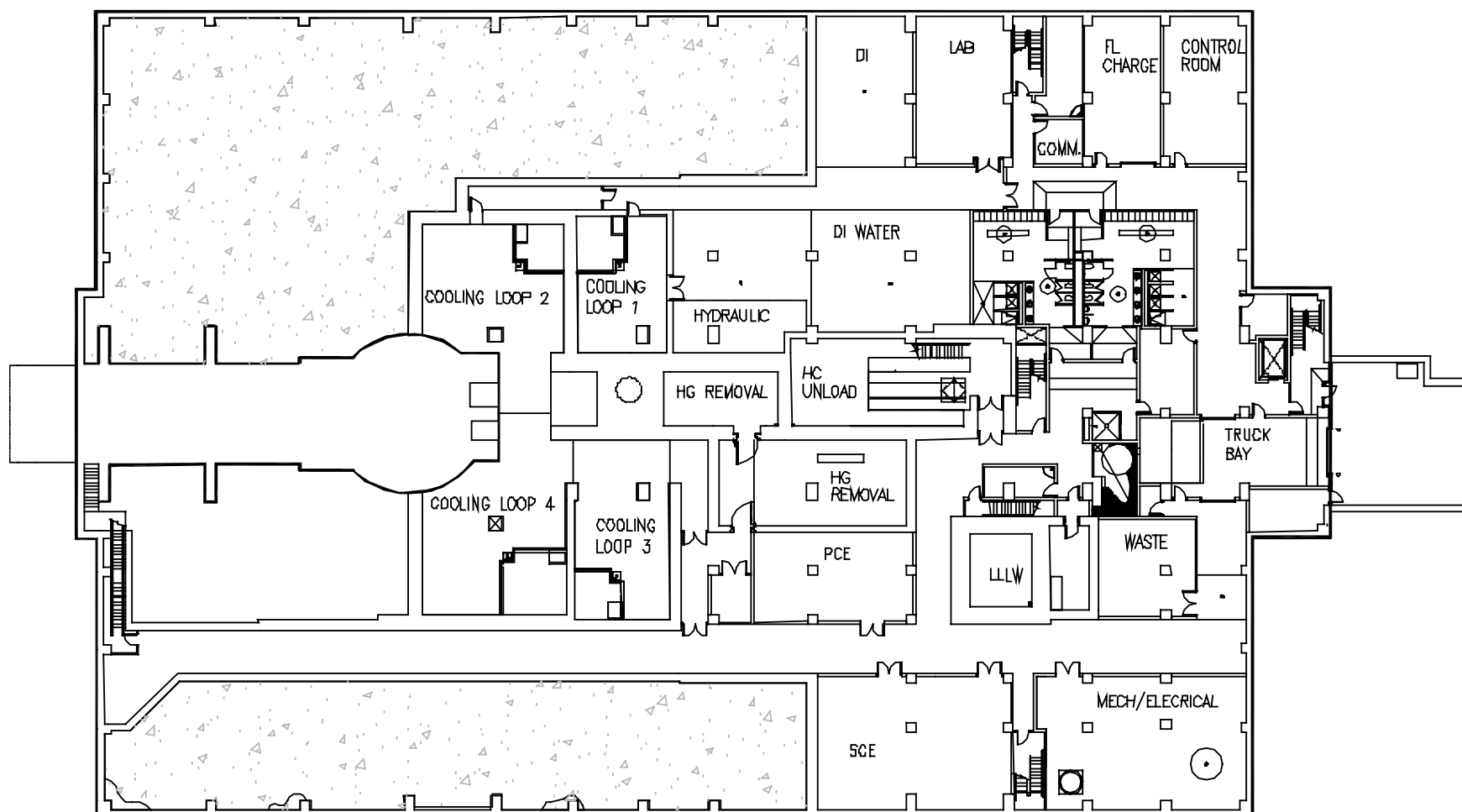
Target Building



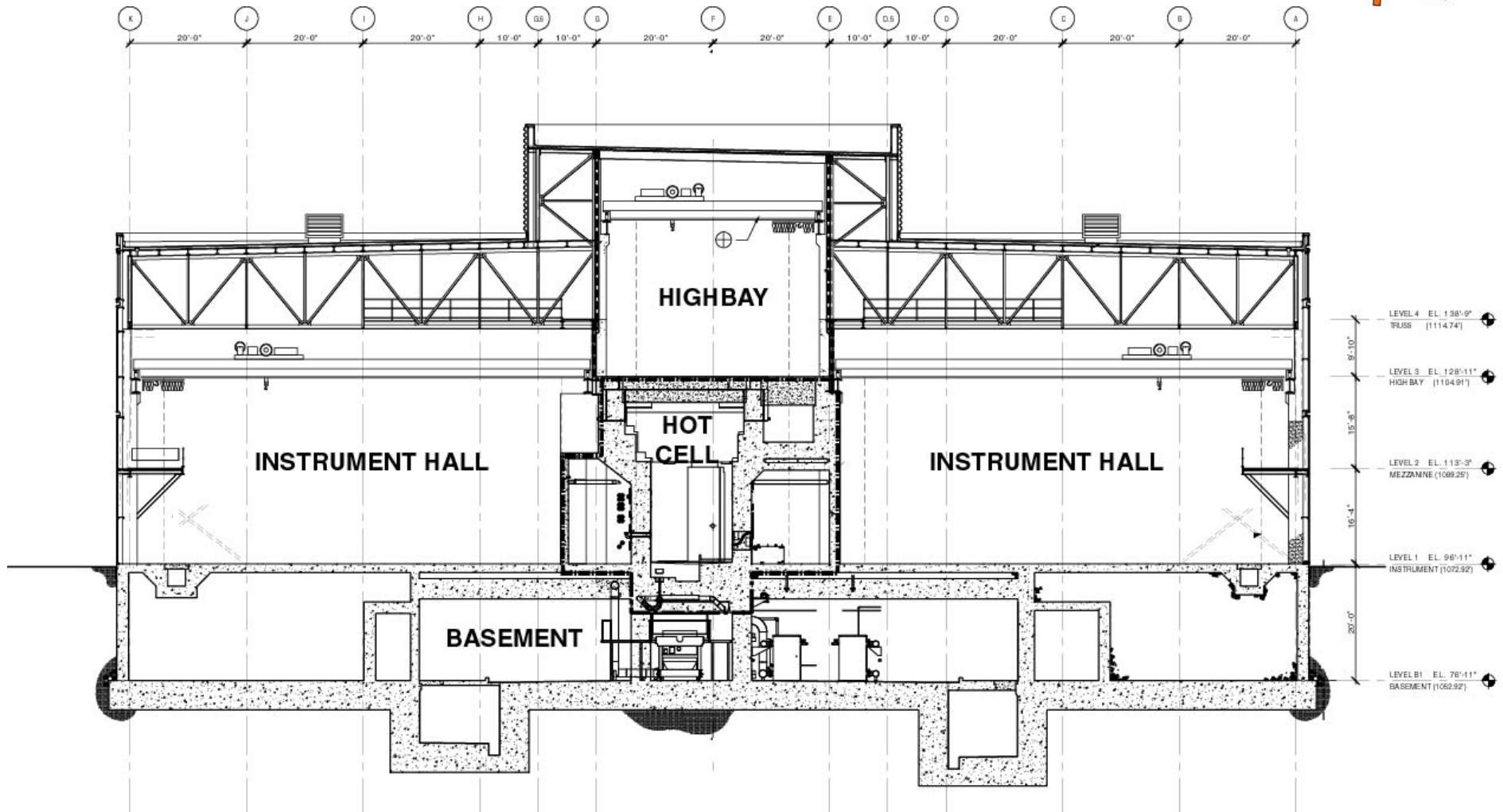
Target Building Instrument Floor Layout



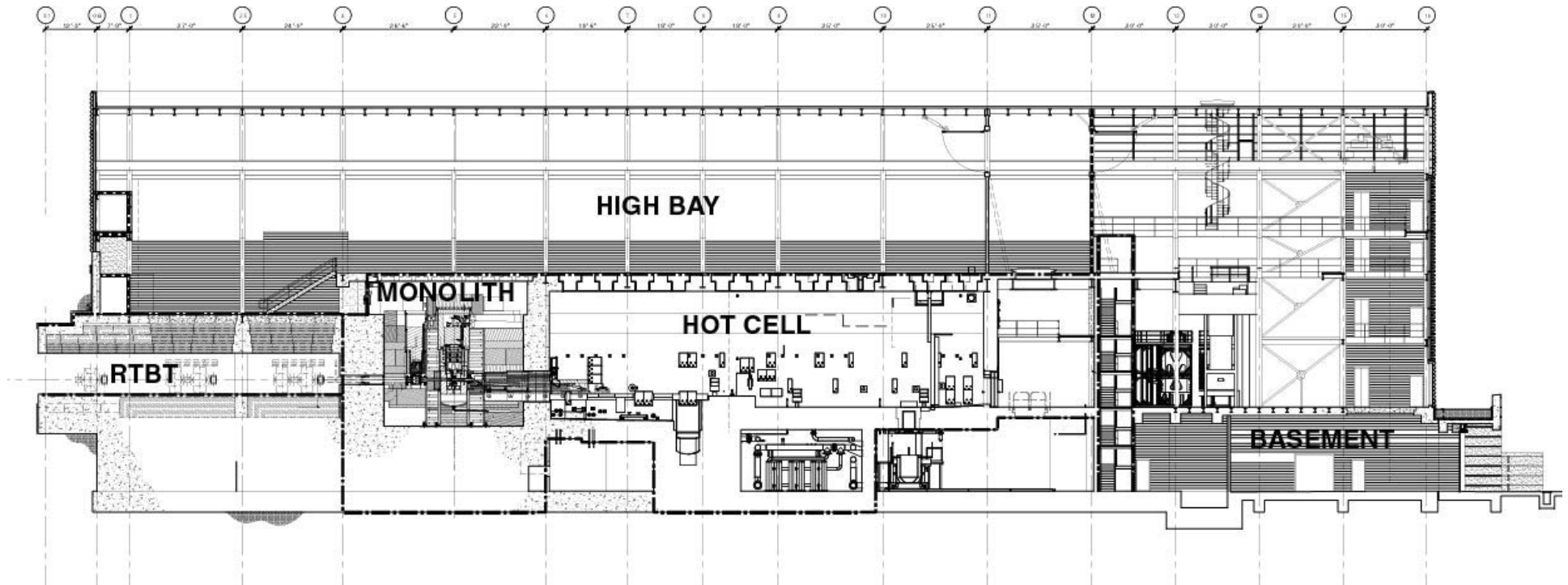
Target Building Basement Layout

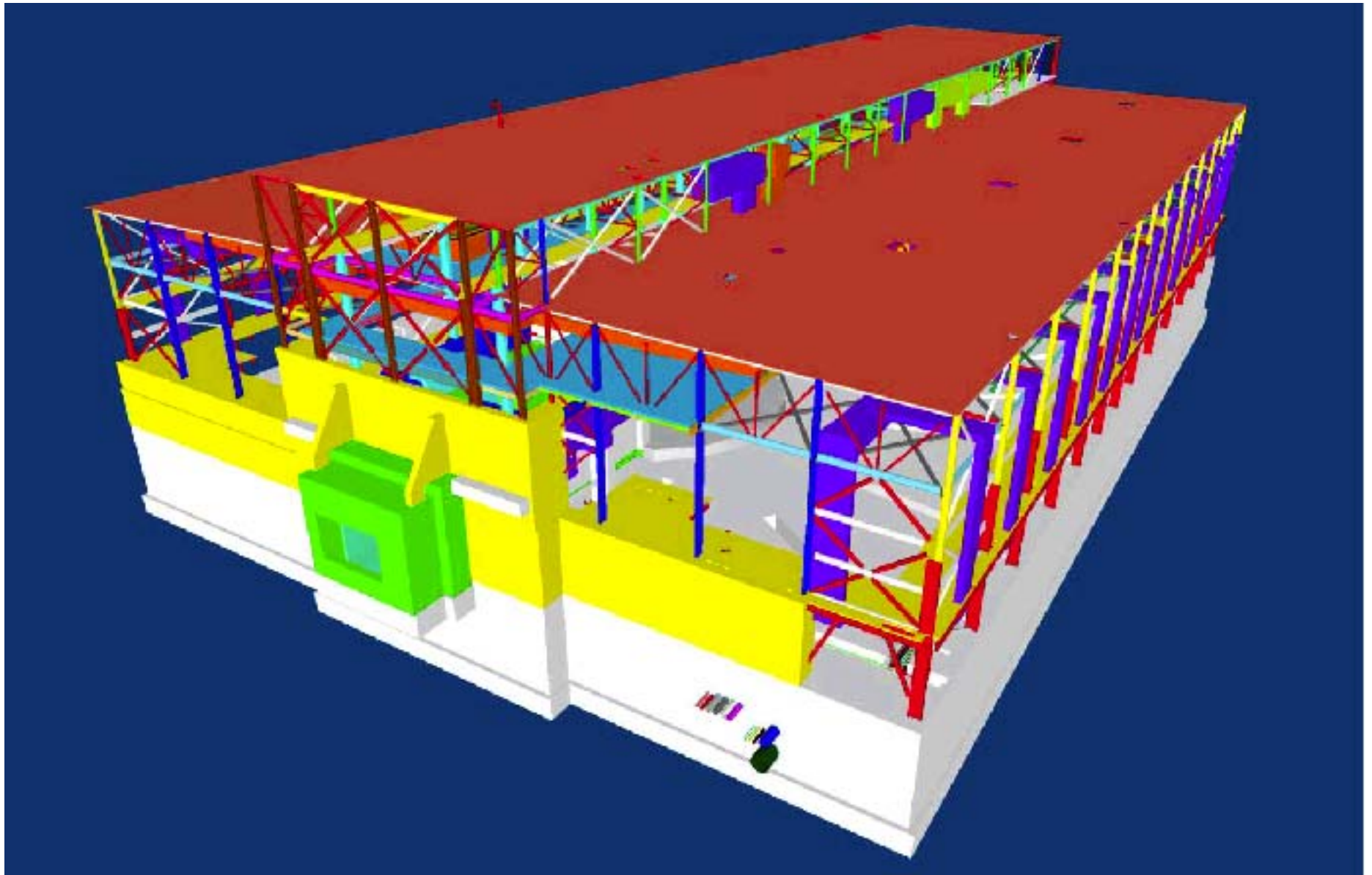


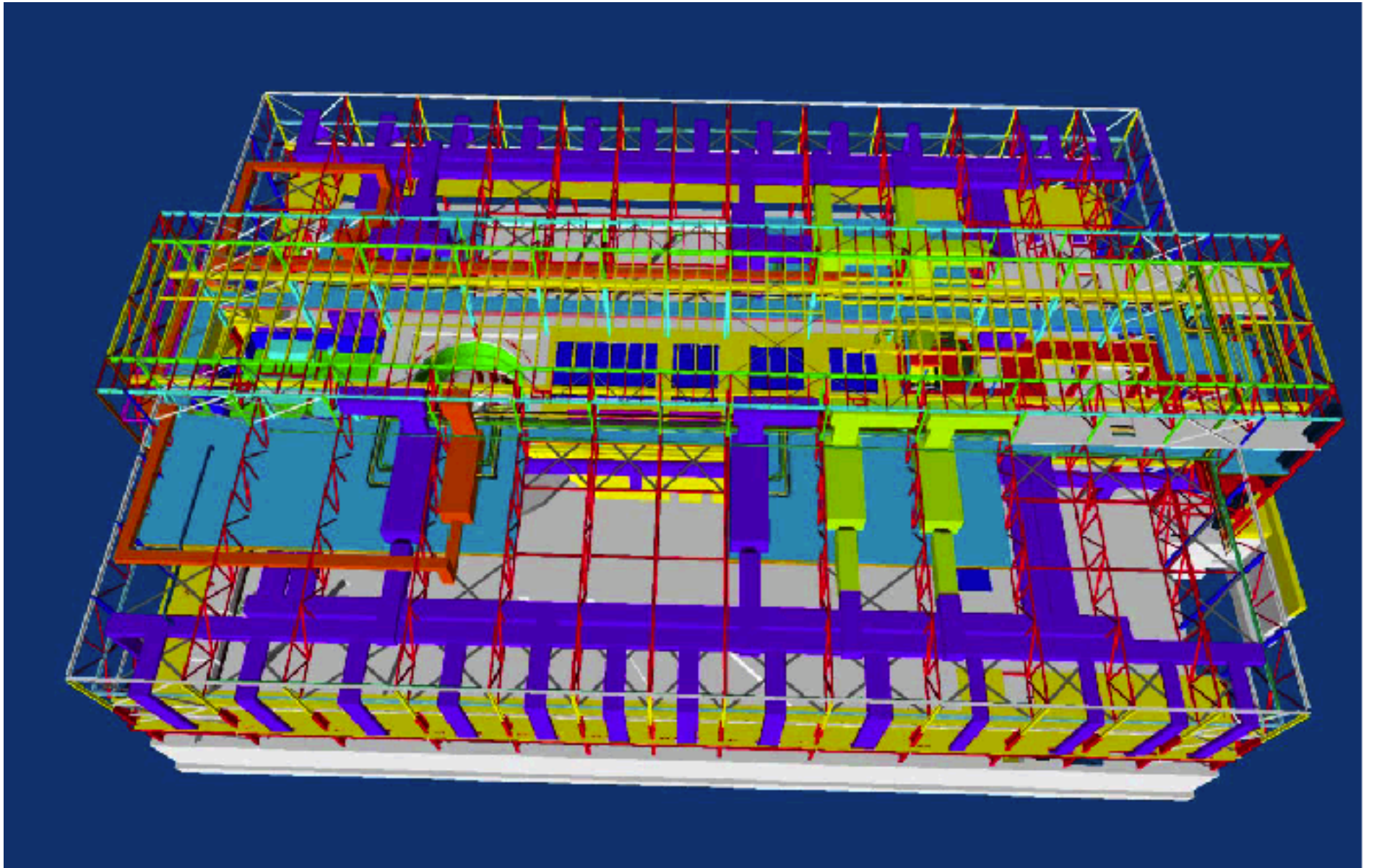
Target Building Transverse Section

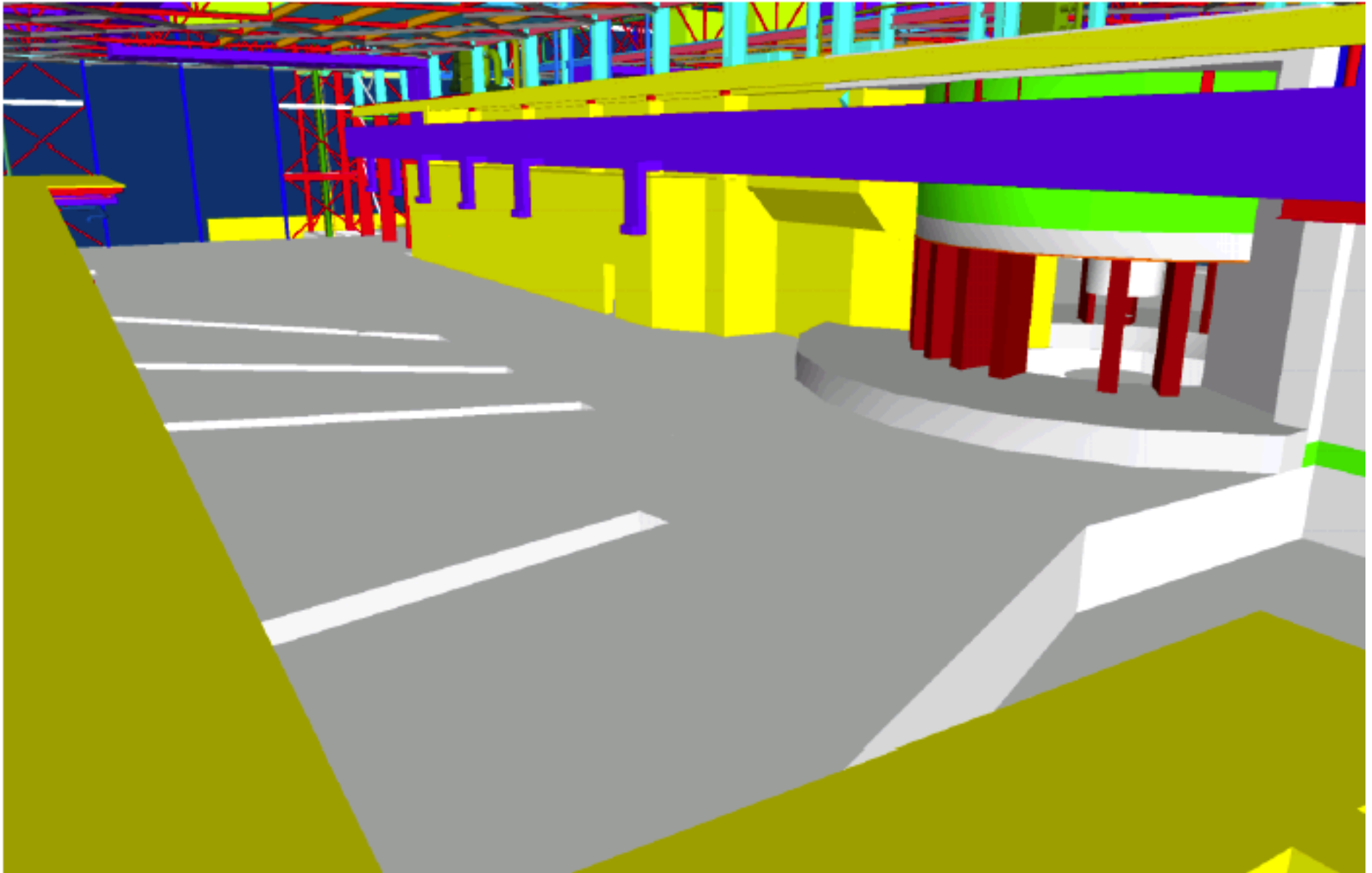


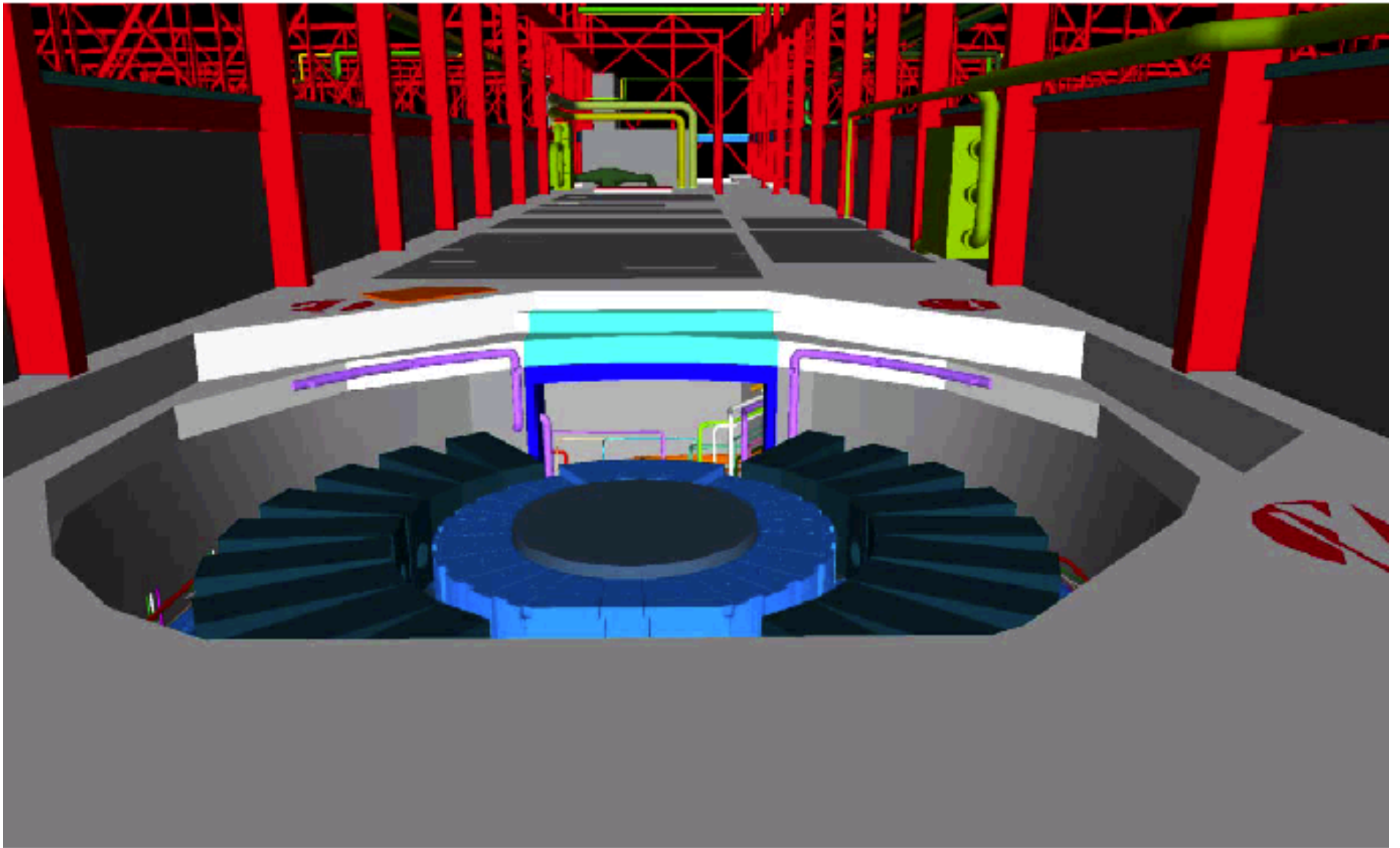
Target Building Longitudinal Section











Target Building Current Construction



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